

1 WHAT IS CLAIMED IS:

2 1. A vehicle surroundings monitoring apparatus for
3 monitoring surroundings of an own vehicle, comprising:

4 imaging means for taking picture images and for
5 outputting image information;

6 radar means;

7 first solid object detecting means for detecting first
8 solid objects based on said image information;

9 second solid object detecting means for detecting
10 second solid objects based on signals from said radar means;

11 fusion solid object establishing means for
12 establishing fusion solid objects by fusing said first solid
13 objects and said second solid objects;

14 reliability judging means for judging whether or not
15 said fusion solid objects have a specified level of reliability;
16 and

17 preceding vehicle selecting means for selecting a
18 preceding vehicle from said fusion solid objects having said
19 specified level of reliability.

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21 2. A vehicle surroundings monitoring apparatus for
22 monitoring surroundings of an own vehicle, comprising:

23 imaging means for taking picture images and for
24 outputting image information;

25 radar means;

1 first solid object detecting means for detecting first
2 solid objects based on said image information;
3 second solid object detecting means for detecting
4 second solid objects based on signals from said radar means;
5 fusion solid object establishing means for
6 establishing fusion solid objects composed of single first solid
7 objects, single second solid objects and a combination of said
8 first solid objects and said second solid objects by fusing said
9 first solid objects and said second solid objects;
10 first reliability judging means for judging a degree
11 of reliability of said fusion solid objects based on a detecting
12 situation of said respective fusion solid objects by said first
13 solid object detecting means;
14 second reliability judging means for judging a degree
15 of reliability of said fusion solid objects based on a detecting
16 situation of said respective fusion solid objects by said second
17 solid object detecting means; and
18 preceding vehicle selecting means for selecting a
19 preceding vehicle from said fusion solid objects when it is judged
20 that said fusion solid objects have a specified level of
21 reliability according to either of said first reliability judging
22 means and said second reliability judging means.
23 3. The vehicle surroundings monitoring apparatus
24 according to claim 2, wherein said first solid object detecting
25 means register a solid object having at least two surfaces

1 connected with each other through a corner as a corner-like solid
2 object and said first reliability judging means judge said
3 reliability of said respective fusion solid objects based on the
4 number of times of coincidence of the fusion solid objects with
5 either of said single first solid objects and a combination of
6 said first solid objects and said second solid objects and at
7 the same time based on the number of times of registration of
8 said respective fusion solid objects as said corner-like solid
9 object by said first solid object detecting means.

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11 4. The vehicle surroundings monitoring apparatus
12 according to claim 2, wherein said second reliability judging
13 means judge said reliability of said respective fusion solid
14 objects based on the number of times of coincidence of said fusion
15 solid objects with either of said single second solid objects
16 and a combination of said first solid objects and said second
17 solid objects.

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19 5. A traveling control system for controlling a
20 traveling of an own vehicle based on information of a preceding
21 vehicle selected by said vehicle surroundings monitoring
22 apparatus described in claims 1, 2, 3 and 4.

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